

REMARKS

Claims 1-14 are pending. Claims 1, 12 and 14 have been amended by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, the drawings were objected to for not showing every feature of the invention specified in the claims; claims 1-14 were rejected under 35 U.S.C. Section 112, 1st paragraph; claim 8 was rejected under 35 U.S.C. Section 103(a) as being unpatentable over Russian Patent No. 2,140,018 (Brodov et al.); and claims 1-7 and 9-14 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brodov et al. in view of any one of U.S. Patent No. 2,085,115 (Moineau), U.S. Patent No. 5,108,273 (Romanyszyn Jr.) or U.S. Patent No. 5,439,359 (Leroy et al.). Reconsideration is respectfully requested.

Drawing Objections

The drawings were objected to for not showing every feature of the invention specified in the claims. However, the feature of the invention not specified has been canceled from the claims by way of the present amendment. Thus, it is respectfully submitted that the outstanding objection is now moot and respectfully requested that the objection be withdrawn.

35 U.S.C. 112 Rejections

Claims 1-14 were rejected under 35 U.S.C. Section 112, 1st paragraph. In particular, the outstanding Office Action indicates the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and or use the invention. However, the feature of the invention not described in the specification has been canceled from the claims by way of the present amendment. Thus, it is respectfully submitted that the outstanding rejection is now moot and respectfully requested that the objection be withdrawn.

35 U.S.C. § 103 Rejections

Claims 1-7 and 9-14 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brodov et al. in view of any one of Moineau, Romanyszyn Jr. or Leroy et al. Reconsideration is respectfully submitted.

First, Applicants wish to thank Examiner Davis for granting Applicant's representatives with a personal interview on November 12, 2008. In particular, in the Interview Summary, Examiner Davis stated: " 'the first element has a symmetry order $n_f=3$ and the second element has symmetry order $n_m=2$ ' and 'the first and second axes (passing through centers O ; Om_1 , Om_2) are parallel and distances $E1$ and $E2$, respectively, and are offset in opposite directions relative to the center O ,' appear to read over Brodov et al." To that end, claim 1 has been amended to clarify the invention and emphasize these differences over Brodov et al. In particular, claim 1 has been amended to recite:

wherein the first element has a symmetry order $n_f=3$ and the second element has symmetry order $n_m=2$,

wherein an inner set (50, 60) of the conjugated elements is placed coaxially in at least one cavity of the second element of an outer set (80, 70) of conjugated elements,

wherein the first and second axes (passing through centers O ; Om_1 , Om_2) are parallel and distances $E1$ and $E2$, respectively, and are offset in opposite directions relative to the center O ,

wherein at least one of said first and second elements of each set is rotatable about its axis, wherein the screw surfaces are non-cylindrical and radially limit the conjugated elements; said method comprising:

creating a rotary motion of at least one element in each set of the sets.

Claims 12 and 14 have been similarly amended. Support for the amendment is shown in FIG. 1 and discussed in the specification which states: "the first element 60 (female element) with inner screw surface 160 in the form of an outer envelope having a symmetry order $n_f=3$ and the inner, second element 50 (male element) with outer screw surface 250 in the form of an initial trochoid having a symmetry order $n_m=2$ form working chambers 20."¹ In addition, the specification also discloses: "the element 70 is mechanically connected to element 50 to swivel about axes passing through centre Om_2 , Om_1 , respectively, and the element 60 is mechanically rigidly connected to

¹ US Patent Publication No. US 2006/0018779 at FIG. 1 and paragraph [0039].

the element **80**, such that the number of working chambers **20, 30, 40** has increased from three to nine.² Thus, it is respectfully submitted that the amendments raise no questions of new matter.

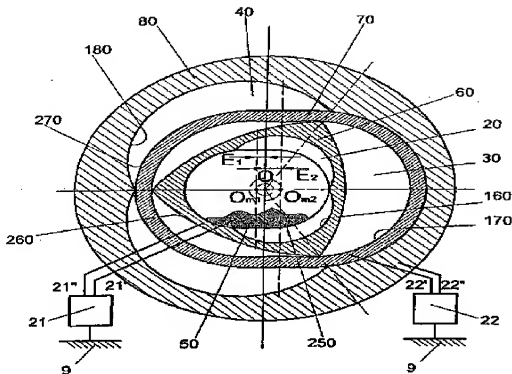


FIG.1

Brodov et al. generally discloses methods of generating differential motion in two-dimensional volumetric displacement machines such as motors, compressors, pumps and internal combustion engines such as Diesel, Otto, and Wankel engines. Brodov et al. also discloses means to increase the number of independent degrees of freedom of rotational motion to two and the number of working cycles of change in volume of combustion chambers in internal combustion engines³. Thus, Brodov et al. is dedicated to two-dimensional machines.

² *Id.* at **FIG. 1** and paragraph [0043].

³ See Brodov et al. at Abstract

However, as indicated above, Brodov et al. nowhere discloses as amended claim 1 recites:

*wherein the first element has a symmetry order $n_f=3$ and the second element has symmetry order $n_m=2$,
wherein an inner set (50, 60) of the conjugated elements is placed coaxially in at least one cavity of the second element of an outer set (80, 70) of conjugated elements,
wherein the first and second axes (passing through centers O ; Om_1 , Om_2) are parallel and distances $E1$ and $E2$, respectively, are offset in opposite directions relative to the center O ,
wherein at least one of said first and second elements of each set is rotatable about its axis, said method comprising:
creating a rotary motion of at least one element in each of the sets (emphasis added).*

That is, as recited in claim 1 and in similar language in claims 12 and 14, the method of the present invention is directed to a method of transforming motion in a volume screw machine “wherein the first element has a symmetry order $n_f=3$ and the second element has symmetry order $n_m=2$ ” and “wherein the first and second axes (passing through centers O ; Om_1 , Om_2) are parallel and distances $E1$ and $E2$, respectively, are offset in opposite directions relative to the center O .” Claims 12 and 14 recites similar limitations. Thus, it is respectfully submitted that Brodov et al. does not disclose, suggest or make obvious the claimed invention and the independent claims 1, 12 and 14, and claims dependent thereon, patentably distinguish thereover.

In addition, the outstanding Office Action acknowledges other deficiencies of Brodov et al. and attempts to overcome these deficiencies by combining Brodov et al. with any of Moineau, Romanyszyn Jr. or Leroy et al. However, it is respectfully submitted that none of the above references overcome all of the deficiencies of Brodov et al.

Moineau generally discloses a gear mechanism adapted for use as a pump, compressor, motor or simple transmission device. In particular, as shown for example in Fig. 1, Moineau discloses the mechanism comprises three helical gear elements 1, 2, 3, located one with the other, wherein the external element 3 comprises three teeth or threads, the intermediate element 2 comprises two such threads, and the central element 1 has only one tooth or thread.

Romanyszyn Jr. discloses a pump assembly that includes commonly driven coaxially positioned helical rotors, rotatably engageable within corresponding stators, wherein each combination of rotor and stator defines a pump having a different volumetric flow rate, each pump discharging to a common discharge port, thereby providing an accurately proportioned mixed fluid of two separate fluids. Leroy et al. discloses a rotary positive displacement machine is formed by a male organ and a female organ that surrounding it, wherein the male and female organs have helicoid surfaces of particular shapes and also have parallel axes.

However, none of Moineau, Romanyszyn Jr. nor Leroy et al. nowhere discloses as amended claim 1 recites:

*wherein the first element has a symmetry order $n_f=3$ and the second element has symmetry order $n_m=2$,
wherein an inner set (50, 60) of the conjugated elements is placed coaxially in at least one cavity of the second element of an outer set (80, 70) of conjugated elements,
wherein the first and second axes (passing through centers O ; Om_1 , Om_2) are parallel and distances $E1$ and $E2$, respectively, are offset in opposite directions relative to the center O ,
wherein at least one of said first and second elements of each set is rotatable about its axis, said method comprising:
creating a rotary motion of at least one element in each of the sets (emphasis added).*

Claims 12 and 14 have been similarly amended. That is, as recited in claim 1 and in similar language in claims 12 and 14, the method of the present invention is directed to a method of transforming motion in a volume screw machine “wherein the first element has a symmetry order $n_f=3$ and the second element has symmetry order $n_m=2$ ” and “wherein the first and second axes (passing through centers O ; Om_1 , Om_2) are parallel and distances $E1$ and $E2$, respectively, are offset in opposite directions relative to the center O .” Claims 12 and 14 recites similar limitations. Thus, it is respectfully submitted that none of Moineau, Romanyszyn Jr. nor Leroy et al. can overcome all of the deficiencies of Brodov et al. Thus, it is respectfully submitted that none of Moineau, Romanyszyn Jr., Leroy et al. or Brodov et al. disclose, suggest or make obvious the claimed invention and that independent claims 1, 12 and 14, and claims dependent thereon, patentably distinguish thereover.

Claim 8 was rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brodiv et al. Reconsideration is respectfully requested.

Claim 8 is ultimately dependent upon claim 1. As discussed above, Brodiv et al. does not disclose the limitations of claim 1 and thus, at least for those same reasons, Brodiv et al. also does not disclose the limitations of claim 8. Therefore, it is respectfully submitted that Brodiv et al. does not disclose, suggest or make obvious claim 8, and that claim 8, and claims dependent thereon, patentably distinguish thereover.

Conclusion

In view of the foregoing, this application should be in condition for allowance. A notice to this effect is respectfully requested. If any fees are due, please charge our Deposit Account No. 22-0185, under Order No. 22193-00008-US1 from which the undersigned is authorized to draw.

Applicants reserve the right to pursue any cancelled claims or other subject matter disclosed in this application in a continuation or divisional application, cancellations and amendments of above claims, therefore, are not to be construed as an admission regarding the patentability of any claims and Applicants reserve the right to pursue such claims in a continuation or divisional application.

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